

Properties of PBS

Mechanical properties

As already underlined, there is a limited choice in commercially available PBS grades. This means that pure materials cover a small range in mechanical properties, while PBS may be used for various packaging applications with different flexibility (from flexible for film applications to rigid for trays applications).

Standard PBS grades exhibit mechanical properties similar to polypropylene (PP) and high density polyethylene (hdPE):

- Young's modulus of about 0.9 GPa
- Flexural modulus of about 0.6 GPa
- Stress at yield of about 40 MPa
- Elongation at yield of about 10%

Mechanical properties of PBS can however be modified by various compounding routes. Among others, blending and additivation can be used to modify properties. PBS then behaves as a standard polymer, with properties varying with the intrinsic properties of the added component, and its mass proportion inside the blend. Modulus as an example can so be increased up by 100%, or be decreased in the same proportion.

PBS mechanical properties can be adapted to various books of specifications for packaging applications. While keeping the food contact aptitude of pure PBS, the following blends may be advised, in line with the blends advised to improve processability:

- **Flexible packaging (film application): PBS + PBSA/PBAT**
- **Rigid application (trays, thermoforming application): PBS + PLA/talcum powder**

Packaging applications using injection moulding: PBS, PBS + PLA/talcum powder for rigid packaging, PBS + PBSA/PBAT for flexible packaging. In each case, the amount of the added component has to be adapted to the needed modification extent.